

University of Groningen

## Modelling energy systems

Schenk, Niels Jan

**IMPORTANT NOTE:** You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

*Document Version*

Publisher's PDF, also known as Version of record

*Publication date:*

2006

[Link to publication in University of Groningen/UMCG research database](#)

*Citation for published version (APA):*

Schenk, N. J. (2006). *Modelling energy systems: a methodological exploration of integrated resource management*. [Thesis fully internal (DIV), University of Groningen]. s.n.

### Copyright

Other than for strictly personal use, it is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license (like Creative Commons).

The publication may also be distributed here under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license. More information can be found on the University of Groningen website: <https://www.rug.nl/library/open-access/self-archiving-pure/taverne-amendment>.

### Take-down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Downloaded from the University of Groningen/UMCG research database (Pure): <http://www.rug.nl/research/portal>. For technical reasons the number of authors shown on this cover page is limited to 10 maximum.

## References

- Agras J and Chapman D, 1999. 'A dynamic approach to the Environmental Kuznets Curve hypothesis'. *Ecological Economics* **28** 267-277.
- Alcamo J, 2001. 'Scenarios as tools for international environmental assessments'. *Environmental issue report*, No. 24, European Environment Agency, Copenhagen. On-line available: [http://reports.eea.eu.int/environmental\\_issue\\_report\\_2001\\_24/en](http://reports.eea.eu.int/environmental_issue_report_2001_24/en)
- Alcamo J, Bouwman A, Edmonds J, Grübler A, Morita T, and Sugandhy A, 1995. 'An evaluation of the IPCC IS92 emission scenarios'. In: Houghton JT, Meira Filho LG, Bruce J, Lee H, Callander BA, Haites E, Harris N, and Maskell K (Editors), *Radiative forcing of climate change and an evaluation of the IPCC IS92 emission scenarios*, pp. 233-304. Cambridge University Press, Cambridge.
- Allen M, 2003. 'Possible or probable?'. *Nature* **425** (18 SEPTEMBER) 242.
- Arthur WB, 1999. 'Complexity and Economy'. *Science* **284** 107-109.
- Atkins PW, 1990. *Physical Chemistry*, 4th edition. Oxford University Press, Oxford.
- Ayres RU, 1998. 'Rationale for a physical account of economic activities'. In: Vellinga P, Berkhout F, and Gupta J (Editors), *Managing a Material World*, pp. 1-20. Kluwer Academic Publishers, Dordrecht.
- Bakkes J, *OECD Environmental Outlook Team*, personal communication, 2004.
- Bakkes J, Henrichs T, Kemp-Benedict E, Masui T, Nellemann C, Potting JMB, Rana A, Raskin P, and Rothman DS, 2004. 'The GEO-3 scenarios 2002-2032: quantification and analysis of environmental impacts'. No. UNEP/DEWA/RS.03-4 and RIVM 402001022, United Nations Environment Programme (UNEP) / National Institute for Public Health and the Environment (RIVM),
- Barde JP, 1995. 'Environmental policy and policy instruments'. In: Folmer H, Gabel HL, and Opschoor H (Editors), *Principles of Environmental and Resource Economics*, pp. 201. Edward Elgar Publishing Limited, Cheltenham.
- Bathurst GN and Strbac G, 2003. 'Value of combining energy storage and wind in short-term energy and balancing markets'. *Electric Power Systems Research* **67** (1) 1-8.
- Battjes JJ, 1999. *Dynamic Modelling of Energy Stocks and Flows in the Economy: An Energy Accounting Approach*. Ph.D. Thesis: Center for Energy and Environmental Studies (IVEM), University of Groningen.
- Battjes JJ and de Kler R, *Nuon Energy Trade & Wholesale*, personal communication, 2004.
- Baumol W, 2004. 'Red-Queen games: arms races, rule of law and market economies'. *Journal of Evolutionary Economics* **14** (2) 237-247.

Beer Jd, Worrell E, and Blok K, 1998. 'Long-term energy-efficiency improvements in the paper and board industry'. *Energy* **23** (1) 21-42.

Bélangier C and Gagnon L, 2002. 'Adding wind energy to hydropower'. *Energy Policy* **30** 1279-1284.

Benders RMJ, 1996. *Interactive simulation of electricity demand and production*. Ph.D. Thesis: Center for Energy and Environmental Studies (IVEM), University of Groningen.

Benders RMJ, Wilting HC, Kramer KJ, and Moll HC, 2001. 'Description and application of the EAP computer program for calculating life-cycle energy use and greenhouse gas emissions of household consumption items'. *International Journal of Environment and Pollution* **15** (2) 171-182.

Bentzen J, 2004. 'Estimating the rebound effect in US manufacturing energy consumption'. *Energy Economics* **26** (1) 123-134.

Berg S, 1995. 'The environmental load of fossil fuels in Swedish forestry: an inventory for a LCA'. In: Frühwald A and Solberg B (Editors), *Life-cycle analysis: a challenge for forestry and forest industry*, pp. 57-65. European Forest Institute (EFI), Joensuu.

Berglund C, Soderholm P, and Nilsson M, 2002. 'A note on inter-country differences in waste paper recovery and utilization'. *Resources, Conservation and Recycling* **34** (3) 175-191.

Berndes G, Hoogwijk M, and van den Broek R, 2003. 'The contribution of biomass in the future global energy supply: a review of 17 studies'. *Biomass & Bioenergy* **25** 1-28.

Bhagwati J, 2004. *In defense of globalization*, Oxford University Press, New York.

Biesiot W and Moll HC, 1995. 'Reduction of CO2 emissions by lifestyle changes'. *IVEM-onderzoeksrapport*, No. 80, Center for Energy and Environmental Studies (IVEM), University of Groningen, Groningen.

Birol F and Keppler JH, 2000. 'Prices, technology development and the rebound effect'. *Energy Policy* **28** 457-469.

Blum L, Denison RA, and Ruston JF, 1998. 'A Life-Cycle Approach to Purchasing and Using Environmentally Preferable Paper'. *Journal of Industrial Ecology* **1** (3) 15-46.

Borchardt JK, 1998. 'Recycling (paper)'. In: Kroschwitz JI and Howe-Grant M (Editors), *Kirk-Othmer Encyclopedia of Chemical Technology, Volume 21*, pp. 10-22. John Wiley & Sons, New York.

Bossel H, 1994. *Modeling and simulation*, A.K. Peters, Wellesley, MA.

- Braathen NA, 2001. 'Model simulations for OECD Environmental Outlook: Methods and Results'. *Fourth Annual Conference on Global Economic Analysis*. Center for Global Trade Analysis, Perdue University, West Lafayette (IN).
- Brack D, 2000. *The environmental implications of trade and investment liberalisation (Background document for the OECD Environmental Outlook for chapter 3: Globalisation, Trade and Investment)*, Organisation for Economic Co-operation and Development, Paris.
- Brinkhorst LJ, 2004. 'Hoe meer groei, hoe beter voor het milieu (the more growth, the better for the environment)'. *De Volkskrant* (6 September).
- Burniaux JM, Martin JP, Nicoletti G, and Oliveira-Martins J, 1992. 'GREEN: A multi-sector, multi-region general equilibrium for quantifying the costs of policies to curb CO2 emissions: a technical manual'. *Economics Department Working Papers*, No. 116, OCDE/GD(92)118, Organisation for Economic Co-operation and Development, Paris.
- BUWAL, 1996. 'Ökoinventare für Verpackungen'. No. SRU 250, Bundesamt für Umwelt, Wald und Landschaft, Bern.
- Carlsson-Kanyama A, Dreborg KH, Eenkorn BR, Engström R, Falkena HJ, Gatersleben B, Hendriksson G, Kok R, Moll HC, Padovan D, Rigoni F, Stø E, Throne-Holst H, Tite L, and Vittersø G, 2003. 'Images of everyday life in the future sustainable city: experiences of back-casting with stakeholders in five European cities'. No. 19, Forskningsgruppen för Miljöstrategiska Studier (FMS), Stockholm.
- Carroll L, 1946. *Alice's adventures in wonderland & through the looking glass*, First edition. The World Publishing Company, Cleveland and New York.
- Castles I and Henderson D, 2003b. 'The IPCC emission scenarios: an economic-statistical critique'. *Energy & Environment* **14** (2&3) 159-185.
- Castles I and Henderson D, 2003a. 'Economics, emissions scenarios and the work of the IPCC'. *Energy & Environment* **14** (4) 415-435.
- CBS (2005). 'Statline', Centraal Bureau voor Statistiek (CBS; Dutch: Central Statistical Office): <http://statline.cbs.nl/StatWeb/> accessed on 12 July 2005.
- CBS (2006). 'Statline', Centraal Bureau voor Statistiek (CBS; Dutch: Central Statistical Office): <http://statline.cbs.nl/StatWeb/> accessed on 18 March 2006.
- CEPI, 2000. *CEPI Annual Statistics 1999*, Confederation of European Paper Industries, Brussels.
- Chave J and Levin SA, 2003. 'Scale and Scaling in Ecological and Economic Systems'. *Environmental and Resource Economics* **26** 527-557.
- Chen Y, Au J, Kazlas P, Ritenour A, Gates H, and McCreary M, 2003. 'Flexible active-matrix electronic ink display (electronic paper)'. *Nature* **423** 136.

Chua S, 1999. 'Economic growth, liberalization, and the environment: a review of the economic evidence'. *Annual Reviews of Energy and the Environment* **24** 391-430.

Chuang CC and Sue DC, 2005. 'Performance effects of combined cycle power plant with variable condenser pressure and loading'. *Energy* **30** (10) 1793-1801.

Craig PP, Gadgil A, and Koomey JG, 2002. 'What can history teach us? a retrospective examination of long-term energy forecasts for the United States'. *Annual Reviews of Energy and the Environment* **27** 83-118.

Curran SR and Sherbinin A, 2004. 'Completing the Picture: The Challenges of Bringing "Consumption" into the Population-Environment Equation'. *Population and Environment* **26** (2) 107-131.

Czuppon TA, Knez SA, and Newsome DS, 1998. 'Hydrogen'. In: Kroschwitz JI and Howe-Grant M (Editors), *Kirk-Othmer Encyclopedia of chemical technology, Volume 13*, pp. 838-894. John Wiley & Sons, New York.

Damen K and Faaij A, 2003. 'A life cycle inventory of existing biomass import chains for "green" electricity production'. No. NW&S-E-2003-1, University of Utrecht, Utrecht.

Davis J and Haglund C, 1999. 'Life Cycle Inventory (LCI) of fertiliser production; fertiliser products used in Sweden and Western Europe'. *SIK-Report*, No. 654 1999, The Swedish Institute for Food and Biotechnology, Göteborg.

de Biasi V, 2000. '270-MW combined cycle with fast startup and high part-load efficiency'. *Gas Turbine World* (Januari-Februari) 14-18.

de Boer W, 1998. 'Aspecten van energie-analyse m.b.t. de productie van gezaagd hout in Nederland (Aspects of energy-analysis regarding production of sawnwood in the Netherlands)'. *IVEM-doctoraalverslag*, No. 91, Center for Energy and Environmental Studies (IVEM), University of Groningen, Groningen.

de Bruyn SM, 2000. *Economic Growth and the Environment: An Empirical Analysis*, Kluwer Academic Publishers, Dordrecht.

de Bruyn SM, 2002. 'Dematerialization and rematerialization as two recurring phenomena of industrial ecology'. In: Ayres RU and Ayres LW (Editors), *A handbook of industrial ecology*, pp. 209. Edward Elgar, Cheltenham, Northhampton MA.

de Bruyn SM and Opschoor JB, 1997. 'Developments in the throughput-income relationship: theoretical and empirical observations'. *Ecological Economics* **20** 255-268.

de Bruyn SM, van den Bergh JCM, and Opschoor JB, 1998. 'Economic growth and emissions: reconsidering the empirical basis of environmental Kuznets curves'. *Ecological Economics* **25** 161-175.

de Castro JFM, 1992. 'Deelrapport: papier'. In: Heijningen RJJv, de Castro JFM, and Worrell E (Editors), *Energiekentallen in relatie tot preventie en hergebruik van afvalstromen*. Van Heijningen Energie- en Milieuadvies, Castro Consulting Engineer

en Vakgroep Natuurwetenschap & Samenleving der Rijksuniversiteit Utrecht, Amersfoort.

de Vries B, Bollen J, Bouwman L, den Elzen M, Janssen M, and Kreileman E, 2000. 'Greenhouse Gas Emissions in an Equity-, Environment- and Service-Oriented World: An IMAGE-Based Scenario for the 21st Century'. *Technological Forecasting and Social Change* **63** (2-3) 137-174.

de Vries HJM, 2001. 'Objective science? The case of climate change models'. In: Goujon P and Heriard Dubreuil B (Editors), *Technology and Ethics, A European Quest for Responsible Engineering*, pp. 485-510. Peeters, Leuven.

de Vries HJM, Dijk D, and Benders RMJ, 1991. *Powerplan: an interactive simulation model about electric power planning*, Center for Energy and Environmental Studies (IVEM), University of Groningen, Groningen.

de Vries HJM, van Vuuren DP, den Elzen MGJ, and Janssen MA, 2001. 'The Timer IMage Energy Regional (TIMER) model'. *Technical Documentation*, No. 461502024/2001, RIVM, Bilthoven.

Dielen LJM and Eppenga R, 2001. *Bos en hout in de wereld: Facts and figures*, Stichting Bos en Hout, Wageningen.

Dobesova K, Apt J, and Lave LB, 2005. 'Are Renewables Portfolio Standards Cost-Effective Emission Abatement Policy?'. *Environ. Sci. Technol.* **39** (22) 8578-8583.

Dohmen F and Hornig F, 2004. 'Die große Luftnummer'. *Der Spiegel* **14** 80-97.

Dopfer K, Foster J, and Potts J, 2004. 'Micro-meso-macro'. *Journal of Evolutionary Economics* **14** (3) 263-279.

Doroodian K and Boyd R, 2003. 'The linkage between oil price shocks and economic growth with inflation in the presence of technological advantages: a CGE model'. *Energy Policy* **31** 989-1006.

EC, 1997. 'Energy For The Future: Renewable Sources Of Energy: White Paper for a Community Strategy and Action Plan'. *Communication from the Commission*, No. COM(97)599 final, European Commission,

EC, 2000. *Integrated Pollution Prevention and Control (IPPC): Reference Document on Best Available Techniques in the Pulp and Paper Industry*, European Commission, Seville.

ECN (2005). 'Energie in Cijfers', Energieonderzoek Centrum Nederland (Energy research Centre of the Netherlands): <http://www.energie.nl/> accessed on 12 July 2005.

Edel I, *Stora Enso Berghuizer Mill*, personal communication, 2003.

EEA, 2002. 'Energy and environment in the European Union'. *Environmental issue report*, No. 31, European Environment Agency, Copenhagen.

- EEA, 2004. 'Impacts of Europe's changing climate: An indicator-based assessment'. *EEA Report*, No. 2/2004, European Environmental Agency, Copenhagen.
- EEA, 2005. *European environment outlook*, European Environment Agency, Copenhagen.
- Ehrlich PR and Holdren JP, 1971. 'Impact of Population Growth'. *Science* **171** 1212-1217.
- Ellis RL and Sedlachek KM, 1993. 'Recycled- versus virgin-fiber characteristics: a comparison'. In: Spangenberg RJ (Editor), *Secondary fibre recycling*, pp. 7-19. TAPPI press, Atlanta.
- Elzen B, Geels FW, and Hofman PS, 2002. 'Sociotechnical Scenarios (STSc): Development and evaluation of a new methodology to explore transitions towards a sustainable energy supply'. *Report for NWO/NOVEM*, No. 014-28-211, University of Twente, Enschede. On-line available:  
[http://www.hersenenenleren.nl/nwohome.nsf/pages/SPES\\_5VEFH5/\\$file/ElzenSTScNWOREport-final.pdf](http://www.hersenenenleren.nl/nwohome.nsf/pages/SPES_5VEFH5/$file/ElzenSTScNWOREport-final.pdf)
- EWEA/Greenpeace, 1999. 'Wind Force 10: A Blueprint To Achieve 10% Of The World's Electricity From Wind Power By 2020'. European Wind Energy Association / Greenpeace, On-line available:  
<http://www.greenpeace.org/~climate/renewables/reports/windf10.pdf>
- EWEA/Greenpeace, 2003. 'Wind Force 12: A Blueprint To Achieve 12% Of The World's Electricity From Wind Power By 2020'. European Wind Energy Association / Greenpeace, On-line available:  
[http://www.greenpeace.org/international\\_en/multimedia/download/1/258714/0/windforce12.pdf](http://www.greenpeace.org/international_en/multimedia/download/1/258714/0/windforce12.pdf)
- EZ (2004). 'Beleid voor windenergie (Policies for Wind Energy)', Ministerie van Economische Zaken (Dutch Ministry of Economic Affairs):  
[http://www.ez.nl/beleid/home\\_ond/duurzenergie/bpo/bpo\\_wind.htm](http://www.ez.nl/beleid/home_ond/duurzenergie/bpo/bpo_wind.htm) accessed on 7 April 2004.
- FAO (2001). 'Food and Agriculture Organisation of the United Nations',  
<http://www.fao.org/waicent/faostat/forestry/products.htm> accessed on 8 August 2001.
- FAO/CEPI, 2000. *Recovered Paper Data, 1998-1999*, Food and Agriculture Organisation of the United Nations / Confederation of European Paper Industries, Rome.
- FAOSTAT (2001). 'FAO Statistical Databases', Food and Agriculture Organisation of the United Nations: <http://apps.fao.org/> accessed on 8 August 2001.
- Farla JCM, 2000. *Physical Indicators of Energy Efficiency*. Ph.D. Thesis: University of Utrecht.
- Farla JCM, Blok K, and Schipper L, 1997. 'Energy efficiency developments in the pulp and paper industry'. *Energy Policy* **25** 745-758.

- Farla JCM and Blok K, 2000. 'The use of physical indicators for the monitoring of energy intensity developments in the Netherlands, 1980-1995'. *Energy* **25** (7) 609-638.
- Farla JCM and Blok K, 2001. 'The quality of energy intensity indicators for international comparison in the iron and steel industry'. *Energy Policy* **29** (7) 523-543.
- Finnveden G and Ekvall T, 1998. 'Life-cycle assessment as a decision-support tool: the case of recycling versus incineration of paper'. *Resources, Conservation and Recycling* **24** (3-4) 235-256.
- Fischer-Kowalski M, 1998. 'Society's metabolism - the intellectual history of materials flow analysis, part I, 1860-1970'. *Journal of Industrial Ecology* **2** (1) 61-78.
- Fischer-Kowalski M, 2004. 'Towards a model predicting freight transport for material flows (submitted)'. *Journal of Industrial Ecology* .
- Fischer-Kowalski M and Amann C, 2001. 'Beyond IPAT and Environmental Kuznets Curves: globalization as a vital factor in analysing the environmental impact of socio-economic metabolism'. *Population and Environment* **23** (1) 7-47.
- Fischer-Kowalski M and Hüttler W, 1998. 'Society's metabolism - the intellectual history of materials flow analysis, part II, 1970-1998'. *Journal of Industrial Ecology* **2** (4) 107-136.
- Focacci A, 2003. 'Empirical evidence in the analysis of the environmental and energy policies of a series of industrialised nations, during the period 1960-1997, using widely employed macroeconomic indicators'. *Energy Policy* **31** 333-352.
- Fraanje PJ and Lafleur MCC, 1994. *Verantwoord gebruik van hout in Nederland*, IVAM Environmental Research, Universiteit van Amsterdam, Amsterdam.
- Frei CW, Haldi PA, and Sarlos G, 2003. 'Dynamic formulation of a top-down and bottom-up merging energy policy model'. *Energy Policy* **31** 1017-1031.
- Frei CW, 2004. 'The Kyoto protocol--a victim of supply security?: or: if Maslow were in energy politics'. *Energy Policy* **32** (11) 1253-1256.
- Froyen RT, 1996. *Macroeconomics: theories & policies*, 5th edition. Prentice Hall International, Inc., New Jersey.
- Funtowicz SO and Ravetz JR, 1993. 'Science for the post-normal age'. *Futures* **25** (7) 739-755.
- Gagnon L, Bélanger C, and Uchiyama Y, 2002. 'Life-cycle assessment of electricity generation options: The status of research in year 2001'. *Energy Policy* **30** 1267-1278.
- Gatersleben B and Vlek Ch, 1998. 'Household consumption, quality of life, and environmental impacts: a psychological perspective and empirical study'. In: Noorman KJ and Schoot Uiterkamp AJM (Editors), *Green households?: domestic consumers, environment and sustainability*, pp. 35-63. Earthscan Publications Ltd, London.



Geels FW, 2002. 'Technological transitions as evolutionary reconfiguration processes: a multi-level perspective and a case-study'. *Research Policy* **31** (8-9) 1257-1274.

Genco JM, 1998. 'Pulp'. In: Kroschwitz JI and Howe-Grant M (Editors), *Kirk-Othmer Encyclopedia of Chemical Technology, Volume 20*, pp. 493. John Wiley & Sons, New York.

Geyer-Allely E and Cheong HS, 2001. *Consumption Patterns (Background document for the OECD Environmental Outlook for Chapter 5: Consumption Patterns and for Chapter 16: Households)*, Organisation for Economic Co-operation and Development, Paris.

Giebel G, 2000. *On the benefits of distributed generation of wind energy in Europe*. Ph.D. Thesis: Carl von Ossietzky Universität, Oldenburg.

Gielen DJ, 1995. 'Toward integrated energy and materials policies?'. *Energy Policy* **23** 1049-1062.

Gielen DJ, 1999. *Materialising dematerialisation: integrated energy and materials systems engineering for greenhouse gas emission mitigation*, Delft University of Technology, Delft.

Gielen DJ, de Feber MAPC, Bos AJM, and Gerlagh T, 2001. 'Biomass for energy or materials? A Western European systems engineering perspective'. *Energy Policy* **29** 291-302.

Gielen DJ and Unander F, 2005. 'Alternative fuels: an energy technology perspective'. *IEA/ETO working paper*, No. ETO/2005/01, International Energy Agency (IEA), Paris.

Godet M, 2002. 'Unconventional wisdom for the future'. *Technological Forecasting and Social Change* **69** 559-563.

Gonzalez A, McKeogh E, and Gallachoir BO, 2004. 'The role of hydrogen in high wind energy penetration electricity systems: The Irish case'. *Renewable Energy* **29** (4) 471-489.

Goralczyk M, 2003. 'Life-cycle assessment in the renewable energy sector'. *Applied Energy* **75** (3-4) 205-211.

Granmar M and Cho A, 2005. 'TECHNOLOGY: Electronic Paper: A Revolution About to Unfold?'. *Science* **308** (5723) 785-786.

Greene R, 1998. *The 48 laws of power*, Viking Penguin, New York.

Gritsevskiy A, 1998. 'The Scenario Generator: a tool for scenario formulation and model linkages'. International Institute for Applied System Analysis (IIASA), Laxenburg.

Groenenberg H, Blok K, and van der Sluijs J, 2005. 'Projection of energy-intensive material production for bottom-up scenario building'. *Ecological Economics* **53** (1) 75-99.

- Grote Beverborg D, 2001. 'The rebound effect'. *IVEM-doctoraalverslag*, No. 120, Center for Energy and Environmental Studies (IVEM), University of Groningen, Groningen.
- Grübler A and Nakicenovic N, 2001. 'Identifying dangers in an uncertain climate'. *Nature* **412** (6842) 15.
- Grübler A, Nakicenovic N, Alcamo J, Davis G, Fenhann J, Hare M, Mori S, Pepper B, Pitcher H, Riahi K, Rogner HH, La Rovere EL, Sankovski A, Schlesinger ME, Shukla P, Swart R, Victor DG, and Jung TY, 2004. 'Emission scenarios: a final response'. *Energy & Environment* **15** (1) 11-24.
- Haberl H, 2001a. 'The energetic metabolism of societies, part I: Accounting concepts'. *Journal of Industrial Ecology* **5** (1) 11-33.
- Haberl H, 2001b. 'The energetic metabolism of societies, part II: Empirical examples'. *Journal of Industrial Ecology* **5** (2) 71-88.
- Hall DO and Scrase JI, 1998. 'Will biomass be the environmentally friendly fuel of the future?'. *Biomass & Bioenergy* **15** (4/5) 357-367.
- Harmelink M and Blok K, 2004. 'Elektriciteitsbesparing als alternatief voor de bouw van nieuwe centrales (Electricity savings as an alternative for the construction of new power plants)'. *Ecofys report*, No. ECS04019, Utrecht. On-line available: <http://www.ecofys.nl/nl/publicaties/RapportenBoeken.asp>
- Heijungs R and Huijbregts MAJ, 2004. 'A review of approaches to treat uncertainties in LCA'. In: Pahl-Wostl C, Schmidt S, Rizzoli AE, and Jakeman AJ (Editors), *Complexity and Integrated Resources Management, Transactions of the 2nd Biennial Meeting of the International Environmental Modelling and Software Society*, pp. 332-339. iEMSs.
- Hekkert MP, Gielen DJ, Worrell E, and Turkenburg WC, 2001. 'Wrapping Up Greenhouse Gas Emissions: An Assessment of GHG Emission Reduction Related to Efficient Packaging Use'. *Journal of Industrial Ecology* **5** (1) 55-75.
- Helm D, 2002. 'Energy policy: security of supply, sustainability and competition'. *Energy Policy* **30** 173-184.
- Hertz N, 2004. *I.O.U. : the debt threat and why we must defuse it*, Harper Perennial, London.
- Heylighen F, 1992. 'Principles of Systems and cybernetics: an evolutionary perspective'. In: Trappl R (Editor), *Cybernetics and Systems*, pp. 3-10. World Science, Singapore.
- Hillman M, 2004. *How we can save the planet*, Penguin Group, London.
- Hirst E, 2002. 'Integrating wind output with bulk power operations and wholesale electricity markets'. *Wind Energy* **5** 19-36.

- Hitchin ER and Pout CH, 2002. 'The carbon intensity of electricity: how many kgC per kWh?'. *Building Services Engineering Research and Technology* **23** (4) 215-222.
- Hondo H, 2005. 'Life cycle GHG emission analysis of power generation systems: Japanese case'. *Energy* **30** (11-12) 2042-2056.
- Huntington HG and Brown SPA, 2004. 'Energy security and global climate change mitigation'. *Energy Policy* **32** (6) 715-718.
- IEA, 1999. *World Energy Outlook - 1999 Insights: Looking at Energy Subsidies: Getting the Prices Right*, International Energy Agency, Paris.
- IEA, 2001. *Energy balances of OECD countries: 1998-1999*, International Energy Agency, Paris.
- IEA, 2002a. *Energy balances of non-OECD countries, 1971-2001 (CD-ROM)*, International Energy Agency, Paris.
- IEA, 2002b. *Energy balances of OECD countries, 1960-2001 (CD-ROM)*, International Energy Agency, Paris.
- IEA, 2002c. *World Energy Outlook: 2002*, International Energy Agency, Paris.
- IEA, 2003. *Renewables for power generation: status and prospects*, International Energy Agency, Paris.
- IEA, 2004a. *Oil Crises and Climate Challenges: 30 Years of Energy Use in IEA Countries*, International Energy Agency, Paris.
- IEA, 2004b. 'The Netherlands: 2004 review'. *Energy policies of IEA countries*, International Energy Agency, Paris.
- IEA, 2005a. *Saving electricity in a hurry: dealing with temporary shortfalls in electricity supplies*, International Energy Agency, Paris.
- IEA, 2005b. *Saving oil in a hurry*, International Energy Agency, Paris.
- IFIAS, 1974. 'Workshop on methodology and conventions'. *Workshop report*, No. 6, International Federation of Institutes for Advanced Study (IFIAS), Stockholm.
- IIED, 1996. *Towards a sustainable paper cycle*, International Institute for Environment and Development (IIED), London.
- IPCC, 2001. *Climate Change 2001: The Scientific Basis*, Cambridge University Press, Cambridge, New York, Melbourne, Madrid, Cape Town.
- IPCC, 2004. 'Climate Change 2001: Synthesis Report, Annex B. Glossary of Terms', pp. 365-388. Cambridge University Press, Cambridge. On-line available: <http://www.ipcc.ch/pub/syrgloss.pdf>

- Jaccard M, Murphy R, and Rivers N, 2004. 'Energy-environment policy modeling of endogenous technological change with personal vehicles: combining top-down and bottom-up methods'. *Ecological Economics* **51** (1-2) 31-46.
- Jaramillo OA, Borja MA, and Huacuz JM, 2004. 'Using hydropower to complement wind energy: a hybrid system to provide firm power'. *Renewable Energy* **29** (11) 1887-1909.
- Johnstone N, 2001. *Resource efficiency and the environment (Background document for the OECD Environmental Outlook for Chapter 23: Resource Efficiency)*, Organisation for Economic Co-operation and Development, Paris.
- Jong MT and Thomann GC, 1983. 'A case study of wind energy conversion systems in an electric utility system'. *Electric Power Systems Research* **6** (2) 117-127.
- Junginger M, 2000. *Experience curves in the wind energy sector - use, analysis and recommendations*. MSc. Thesis: University of Utrecht.
- Junginger M, Agterbosch S, Faaij APC, and Turkenburg WC, 2004. 'Renewable electricity in the Netherlands'. *Energy Policy* **32** (9) 1053-1073.
- Kahn KB, 1998. 'Revisiting top-down versus bottom-up forecasting'. *The Journal of Business Forecasting* (Summer) 14-19.
- Kaiser J, 2005. 'CLIMATE CHANGE: Scientist Quits IPCC Panel Over Comments'. *Science* **307** (5709) 501b.
- Kammen DM and Pacca S, 2004. 'Assessing the Costs of Electricity'. *Annual Review of Environment and Resources* **29** (1) 301-344.
- Kaya Y, 1990. 'Impact of Carbon Dioxide Emission Control on GNP Growth: Interpretation of Proposed Scenarios'. *Paper presented to the IPCC Energy and Industry Subgroup, Response Strategies Working Group*, Paris.
- Keepin B and Wynne B, 1984. 'Technical analysis of IIASA energy scenarios'. *Nature* **312** 691-695.
- Kemp-Benedict E and Raskin P, 2001. *Global Environmental Scenarios: Technical Notes on use of PoleStar for the OECD Environmental Outlook (Background document for the OECD Environmental Outlook For Modelling and Assessments)*, Organisation for Economic Co-operation and Development, Paris.
- Kennedy S, 2005. 'Wind power planning: assessing long-term costs and benefits'. *Energy Policy* **33** (13) 1661-1675.
- Kerr RA and Service RF, 2005. 'What Can Replace Cheap Oil--and When?'. *Science* **309** (5731) 101.
- Kim TS, 2004. 'Comparative analysis on the part load performance of combined cycle plants considering design performance and power control strategy'. *Energy* **29** (1) 71-85.

Klass DL, 1998. 'Fuels from biomass'. In: Kroschwitz JJ and Howe-Grant M (Editors), *Kirk-Othmer Encyclopedia of chemical technology, Volume 12*, pp. 16-110. John Wiley & Sons, New York.

Kleijn R, 1999. 'In = Out: the trivial central paradigm of MFA?'. *Journal of Industrial Ecology* **3** (2&3) 8-10.

Kleijnen JPC, 1993. 'Verification and validation of models'. *Research memorandum*, Department of Economics, Tilburg University, Tilburg.

Kok R, Benders RMJ, and Moll HC, 2001. 'Energie-intensiteiten van de Nederlandse consumptieve bestedingen anno 1996 (Energy intensities of the Dutch consumptive purchases in 1996)'. *IVEM-onderzoeksrapport*, No. 105, Center for Energy and Environmental Studies (IVEM), University of Groningen, Groningen.

Kram T, Gielen DJ, Bos AJM, de Feber MAPC, Gerlagh T, Groenendaal BJ, Moll HC, Bouwman ME, Daniëls BW, Worrell E, Hekkert MP, Joosten LAJ, Groenewegen P, and Govers T, 2001. 'The MATTER project: Integrated energy and materials systems engineering for GHG emission mitigation'. *Dutch National Research Programme on Global Air Pollution and Climate Change*, No. 410 200 055 (2001), National Institute of Public Health and the Environment (RIVM), Bilthoven.

Kram T, Morita T, Riahi K, Roehrl RA, Van Rooijen S, Sankovski A, and de Vries B, 2000. 'Global and Regional Greenhouse Gas Emissions Scenarios'. *Technological Forecasting and Social Change* **63** (2-3) 335-371.

Kramer KJ, 2000. *Food matters: on reducing energy use and greenhouse gas emissions from household food consumption*. Ph.D. Thesis: Center for Energy and Environmental Studies (IVEM), University of Groningen.

Kriegler E and Bruckner T, 2004. 'Sensitivity Analysis of Emissions Corridors for the 21st Century'. *Climatic Change* **66** (3) 345-387.

Lempert R, Nakicenovic N, Sarewitz D, and Schlesinger ME, 2004. 'Characterizing Climate-Change Uncertainties For Decision-Makers: An Editorial Essay'. *Climatic Change* **65** 1-9.

Lensink SM, 2005. *Keuzes voor duurzaamheid: energie op de drempel van transitie (Choices for sustainability)*, Wetenschappelijk Instituut voor het CDA (Scientific Institute for the Dutch Christian Democratic Party), Den Haag.

Lifset R, 1999. 'The industrial ecology of renewable resources'. No. ZEF-EN-1999-2, United Nations University (UNU/ZEF),

Linden HR, 1996. 'The evolution of an energy contrarian'. *Annual Reviews of Energy and the Environment* **21** 31-67.

Löfgren KG, 1995. 'Markets and externalities'. In: Folmer H, Gabel HL, and Opschoor H (Editors), *Principles of Environmental and Resource Economics*, pp. 17. Edward Elgar Publishing Limited, Cheltenham.

- Lomborg B, 2001. *The sceptical environmentalist: measuring the real state of the world*, Cambridge University Press, Cambridge.
- Lovelock J, 1988. *The ages of Gaia: a biography of our living earth*, revised and expanded edition. W.W. Norton & company, New York - London.
- Lovelock J, 2003. 'The Living Earth - Gaia'. *Nature* **426** 769-770.
- Lund H, 2005. 'Large-scale integration of wind power into different energy systems'. *Energy* **30** (13) 2402-2412.
- MacLean HL and Lave LB, 2003. 'Life Cycle Assessment of Automobile/Fuel Options'. *Environ. Sci. Technol.*
- Maddison A, 2004. 'The PPPrice is right'. *The Economist* **372** (8383) 14.
- Maddison A, 2001. *The world economy: a millennial perspective*, Organisation for Economic Co-operation and Development, Paris.
- Manne A, Richels R, and Edmonds J, 2005. 'Market Exchange Rates Or Purchasing Power Parity: Does The Choice Make A Difference To The Climate Debate?'. *Climatic Change* **71** (1 - 2) 1-8.
- Mastrandrea MD and Schneider SH, 2004. 'Probabilistic Integrated Assessment of "Dangerous" Climate Change'. *Science* **304** (5670) 571-575.
- Matthews E, Amann C, Bringezu S, Fischer-Kowalski M, Hüttler W, Kleijn R, Moriguchi Y, Ottke C, Rodenburg E, Rogich D, Schandl H, Schütz H, van der Voet E, and Weisz H, 2000. *The weight of nations: material outflows from industrial economies*, World Resources Institute, Washington, DC.
- McFarland JR, Reilly JM, and Herzog HJ, 2004. 'Representing energy technologies in top-down economic models using bottom-up information'. *Energy Economics* **26** (4) 685-707.
- McKibbin WJ, Pearce D, and Stegman A, 2004b. 'Long run projections for climate change scenarios'. *Brookings Discussion Papers in International Economics*, No. 160, The Brookings Institution, Washington (DC). On-line available: [http://www.brookings.edu/views/papers/20040415\\_bdpie160.htm](http://www.brookings.edu/views/papers/20040415_bdpie160.htm)
- McKibbin WJ, Pearce D, and Stegman A, 2004a. 'Can the IPCC SRES be improved?'. *Energy & Environment* **15** (3) 351-362.
- Messner S and Strubegger M, 1995. 'User's guide for MESSAGE III'. No. WP-95-69, International Institute for Applied Systems Analysis, Laxenburg. On-line available: [http://www.iiasa.ac.at/Research/ECS/docs/MESSAGE\\_man018.pdf](http://www.iiasa.ac.at/Research/ECS/docs/MESSAGE_man018.pdf)
- Messner S and Schrattenholzer L, 2000. 'MESSAGE-MACRO: linking an energy supply model with a macroeconomic module and solving it iteratively'. *Energy* **25** (3) 267-282.

- Miketa, Asami (2004a). 'Technical description on the growth study datasets', Environmentally Compatible Energy Strategies, International Institute for Applied Systems Analysis (IIASA): [http://www.iiasa.ac.at/Research/ECS/data\\_am/](http://www.iiasa.ac.at/Research/ECS/data_am/) accessed on June-August 2004.
- Miketa A, 2004b. *The Use of Purchasing Power Parities in Long-Term Economic Growth Scenarios*, presentation at IIASA, International Institute for Applied System Analysis (IIASA), Laxenburg.
- Miketa A and Mulder P, 2005. 'Energy productivity across developed and developing countries in 10 manufacturing sectors: Patterns of growth and convergence'. *Energy Economics* **27** (3) 429-453.
- Moll HC, 1993. *Energy counts and materials matter in models for sustainable development*. Ph.D. Thesis: Center for Energy and Environmental Studies (IVEM), University of Groningen.
- Moll HC and Groot-Marcus A, 2002. 'Household past, present and opportunities for change'. In: Kok M, Vermeulen W, Faaij A, and de Jager D (Editors), *Global Warming and Social Innovation: The challenge of a climate neutral society*, pp. 83-106. Earthscan, London.
- Moll HC, Noorman KJ, Kok R, Engström R, Throne-Holst H, and Clark C, 2005. 'Pursuing More Sustainable Consumption by Analyzing Household Metabolism in European Countries and Cities'. *Journal of Industrial Ecology* **9** (1-2) 259-275.
- Momirlan M and Veziroglu TN, 2002. 'Current status of hydrogen energy'. *Renewable & Sustainable Energy Reviews* **6** 141-179.
- Morris J, 1996. 'Recycling versus incineration: an energy conservation analysis'. *Journal of Hazardous Materials* **47** (1-3) 277-293.
- Muskulus M and Jacob D, 2005. 'Tracking cyclones in regional model data: the future of Mediterranean storms'. *Advances in Geosciences* **2** 13-19.
- Nakicenovic N, Alcamo J, Davis G, de Vries HJM, Fenhann J, Gaffin S, Gregory K, Grübler A, Jung TY, Kram T, La Rovere EL, Michaelis L, Mori S, Morita T, Pepper W, Pitcher H, Price L, Riahi K, Roehrl A, Rogner HH, Sankovski A, Schlesinger ME, Shukla P, Smith S, Swart R, van Rooijen S, Victor N, and Dadi Z, 2000. *Special Report on Emissions Scenarios*, International Panel on Climate Change: Cambridge University Press, Cambridge.
- Nakicenovic N, Grübler A, Gaffin S, Jung TT, Kram T, Morita T, Pitcher H, Riahi K, Schlesinger ME, Shuka PR, van Vuuren DP, Davis G, Michaelis L, Swart R, and Victor N, 2003. 'The IPCC emission scenarios: a response'. *Energy & Environment* **14** (2&3) 187-214.
- Nakicenovic N, Grübler A, and McDonald A, 1998. *Global Energy Perspectives*, Cambridge University Press / IIASA-WEC, Cambridge.
- Newman J, Beg N, Corfee-Morlot J, and McGlynn G, 2001. *Energy and Climate Change: trends, drivers, outlook and policy options (Background document for the*

OECD *Environmental Outlook for chapter 12: Energy and Chapter 13: Climate Change*), Organisation for Economic Co-operation and Development, Paris.

Niessen WR, 1978. *Combustion and inceneration processes: applications in environmental engineering*, Marcel Dekker, Inc., New York.

Noorman KJ, 1995. *Exploring futures from an energy perspective - a Natural Capital Accounting model study into the long-term economic development potential of the Netherlands*. Ph.D. Thesis: Center for Energy and Environmental Studies (IVEM), University of Groningen.

OECD, 1999. 'The three-year project on sustainable development: a progress report', pp. 51-65. No. PAC/AFF(99)1, Organisation for Economic Co-operation and Development, Paris.

OECD, 2001a. *Environmental Strategy for the First Decade of the 21st Century*, Organisation for Economic Co-operation and Development, Paris.

OECD, 2001b. *OECD Environmental Outlook*, Organisation for Economic Co-operation and Development, Paris.

OECD, 2001c. 'Sustainable consumption: sector case studies & Household food consumption: trends, environmental impacts and policy'. *Working Party on National Environmental Policy*, No. ENV/EPOC/WPNEP(2001)13/FINAL, Organisation for Economic Co-operation and Development, Paris.

OECD, 2001d. *Sustainable Development: critical issues*, Organisation for Economic Co-operation and Development, Paris.

OECD, 2001e. *The Application of Biotechnology to Industrial Sustainability*, Organisation for Economic Co-operation and Development, Paris.

OECD, 2004a. *Environmental Data Compendium 2004*, Organisation for Economic Co-operation and Development, Paris.

OECD, 2004b. 'Workshop on Experiences and Perspectives of Service-Oriented Strategies in the Chemical Industry and Related Areas'. *Series on Risk Management*, No. 17 [ENV/JM/MONO(2004)28/PART1], Organisation for Economic Co-operation and Development, Paris. On-line available:  
[http://www.oilis.oecd.org/oilis/2004doc.nsf/LinkTo/env-jm-mono\(2004\)28-part1](http://www.oilis.oecd.org/oilis/2004doc.nsf/LinkTo/env-jm-mono(2004)28-part1)

OECD, 2004c. 'Workshop on Experiences and Perspectives of Service-Oriented Strategies in the Chemical Industry and Related Areas'. *Series on Risk Management*, No. 17 [ENV/JM/MONO(2004)28/PART2], Organisation for Economic Co-operation and Development, Paris. On-line available:  
[http://www.oilis.oecd.org/oilis/2004doc.nsf/LinkTo/env-jm-mono\(2004\)28-part2](http://www.oilis.oecd.org/oilis/2004doc.nsf/LinkTo/env-jm-mono(2004)28-part2)

OECD (2005). 'Purchasing Power Parities (PPP), About', Statistics Directorate, Organisation for Economic Co-operation and Development:  
[http://www.oecd.org/about/0,2337,en\\_2649\\_34357\\_1\\_1\\_1\\_1\\_1,00.html](http://www.oecd.org/about/0,2337,en_2649_34357_1_1_1_1_1,00.html) accessed on 11 October 2005.



- Ogden JM, 1999. 'Prospects for building a hydrogen energy infrastructure'. *Annual Reviews of Energy and the Environment* **24** 227-279.
- Or Z, 2000. 'Determinants of health outcomes in industrialised countries: a pooled, cross-country, time-series analysis'. *OECD Economic Studies* **30** (I) 53-77.
- Parikh JK, 1992. 'IPCC strategies unfair to the south'. *Nature* **360** 507-508.
- Patterson MG, 1996. 'What is energy efficiency? : Concepts, indicators and methodological issues'. *Energy Policy* **24** (5) 377-390.
- Pearce D, 2002. 'An intellectual history of environmental economics'. *Annual Reviews of Energy and the Environment* **27** 57-81.
- Perrow CB, 1984. *Normal accidents: living with high-risk technologies*, Basic Books, New York.
- Pilate G, Guiney E, Holt K, Petit-Conil M, Lapierre C, Leplé JC, Pollet B, Mila I, Webster EA, Marstorp HG, Hopkins DW, Jouanin L, Boerjan W, Schuch W, Cornu D, and Halpin C, 2002. 'Field and pulping performances of transgenic trees with altered lignification'. *Nature Biotechnology* **20** (6) 607-612.
- Pittock AB, 2002. 'What we know and don't know about climate change: reflections on the IPCC TAR'. *Climatic Change* **53** 393-411.
- Pittock AB, Jones RN, and Mitchell CD, 2001. 'Probabilities will help us plan for climate change'. *Nature* **413** (6853) 249.
- Prigogine I and Stengers I, 1984. *Order out of chaos*, New Science Library, Boulder (CO).
- Rajotte A, 2000. *Pulp and Paper industry (Background document for the OECD Environmental Outlook for Chapter 18: Pulp and Paper industry)*, Organisation for Economic Co-operation and Development, Paris.
- Ramirez CA, Patel M, and Blok K, 2005. 'The non-energy intensive manufacturing sector.: An energy analysis relating to the Netherlands'. *Energy* **30** (5) 749-767.
- Reichart I and Hischer R, 2002. 'The environmental impact of getting the news: a comparison of on-line, television and newspaper information delivery'. *Journal of Industrial Ecology* **6** (3/4) 185-200.
- Reilly J, Stone PH, Forest CE, Webster MD, Jacoby HD, and Prinn RG, 2001. 'CLIMATE CHANGE: Uncertainty and Climate Change Assessments'. *Science* **293** (5529) 430a-4433.
- Riahi K, *IIASA-ECS*, personal communication, 2004.
- Riahi K and Roehrl RA, 2000. 'Greenhouse Gas Emissions in a Dynamics-as-Usual Scenario of Economic and Energy Development'. *Technological Forecasting and Social Change* **63** (2-3) 175-205.

- Ringland G, 1998. *Scenario planning*, John Wiley & Sons, Chicester.
- RIVM, 2004. 'Kwaliteit en toekomst: verkenning van duurzaamheid (Quality and future: sustainability outlook)'. Rijksinstituut voor Volksgezondheid en Milieu (RIVM), Bilthoven. On-line available:  
<http://www.rivm.nl/bibliotheek/rapporten/duve04001.html>
- Rizzoli AE and Davis JR, 1999. 'Integration and re-use of environmental models'. *Environmental Modelling & Software* **14** 493-494.
- Roca J, 2003. 'Do individual preferences explain the Environmental Kuznets curve?'. *Ecological Economics* **45** 3-10.
- Rogers EM, 1995. *Diffusion of innovations*, fourth edition. The Free Press, New York.
- Rothman DS, 1998. 'Environmental Kuznets curves: real progress or passing the buck?: a case for consumption-based approaches'. *Ecological Economics* **25** 177-194.
- Rotmans J, Grin J, Schot J, and Smits REHM, 2003. 'NIDO/KSI Appendix A - Multi-, Inter- and Transdisciplinary Research Program into Transitions and System Innovations'. NIDO/KSI, On-line available:  
<http://www.nido.nu/image/publicatie/bestand/1048677537.pdf>
- Rowlands IH, 2005. 'The European directive on renewable electricity: conflicts and compromises'. *Energy Policy* **33** (8) 965-974.
- Rühle B, 2004. 'Scenario Generator 2: Transportation (not published)'. *Interim Report*, IIASA, Laxenburg.
- Ruth M and Harrington T, 1997a. 'Dynamics of material and energy use in U.S. pulp and paper manufacturing'. *Journal of Industrial Ecology* **1** (3) 147-168.
- Ruth M and Harrington T, 1997b. 'Wastepaper repulping versus incineration in the US pulp and paper industry: a dynamic systems analysis'. *International Journal of Energy, Environment and Economics* **5** (3/4) 151-182.
- Sanstad AH and Greening LA, 1998. 'Economic models for climate policy analysis: a critical discussion'. *Environmental Modeling and Assessment* **3** 3-18.
- Schenk NJ, 2000. *Modelling in the EOS Project, presentation for the Advisory Panel of the OECD Environmental Outlook and Strategy (EOS) Project*, Organisation for Economic Co-operation and Development (OECD), Paris.
- Schenk NJ, Potting JMB, Moll HC, and Benders RMJ, 2005. 'Wind energy, electricity and hydrogen in the Netherlands (submitted)'. *Energy*.
- Schipper L, Unander F, Murtishaw S, and Ting M, 2001. 'Indicators of energy use and carbon emissions: explaining the energy economy link'. *Annual Reviews of Energy and the Environment* **26** 49-81.
- Schneider SH, 2001. 'What is 'dangerous' climate change?'. *Nature* **411** (6833) 17-19.

- Schneider SH and Mastrandrea MD, 2005. 'Probabilistic assessment of "dangerous" climate change and emissions pathways'. *PNAS* 0506356102.
- Schwartz P, 1999. *The art of the long view: planning for the future in an uncertain world*, John Wiley & Sons Ltd, Chichester.
- Sedjo RA, 2002. 'Wood materials used as a means to reduce greenhouse gases (GHGs): An examination of wooden utility poles'. *Mitigation and Adaptation Strategies for Global Change* 7 (2) 191-200.
- Sep, 1996. *Elektriciteitsplan 1997 - 2006 & Toelichting op het Elektriciteitsplan 1997 - 2006*, N.V. Samenwerkende electriciteits-producenten (Sep), Arnhem.
- Sep, 1999. 'Elektriciteit in Nederland 1998 (Electricity in the Netherlands 1998)'. *Electriciteit in Nederland*, N.V. Samenwerkende elektriciteits-productiebedrijven (Sep), en de Vereniging van Energiedistributiebedrijven in Nederland (EnergieNed) (N.V. Sep/the Dutch Electricity Generating Board and the Association of Energy Distribution Companies in the Netherlands), Arnhem.
- Sheble GB and Fahd GG, 1994. 'Unit commitment literature synopsis'. *IEEE Transactions on Power Systems* 9 (1) 128-135.
- Sims REH, Rogner HH, and Gregory K, 2003. 'Carbon emission and mitigation cost comparisons between fossil fuel, nuclear and renewable energy resources for electricity generation'. *Energy Policy* 31 1315-1326.
- Smil V, 2000. 'Energy in the twentieth century: resources, conversions, costs, uses, and consequences'. *Annual Reviews of Energy and the Environment* 25 21-51.
- Smith SJ, Wigley TML, and Edmonds J, 2000. 'CLIMATE: A New Route Toward Limiting Climate Change?'. *Science* 290 (5494) 1109-1110.
- Sørensen B, 2000. *Renewable energy: its physics, engineering, use, environmental impacts, economy and planning aspects*, Academic Press, San Diego, San Fransisco, New York, Boston, London, Sydney, Tokyo.
- Sundqvist T, 2004. 'What causes the disparity of electricity externality estimates?'. *Energy Policy* 32 (15) 1753-1766.
- Swart RJ, Raskin P, and Robinson J, 2004. 'The problem of the future: sustainability science and scenario analysis'. *Global Environmental Change Part A* 14 (2) 137-146.
- Tennet, 2002. 'Capaciteitsplan 2003-2009 (Capacity planning 2003-2009)'. Arnhem.
- The Economist, 2003a. 'A greener Bush'. *The Economist* 366 (8311) 12-13.
- The Economist, 2003b. 'Hot potato - the International Panel on Climate Change had better check its calculations'. *The Economist* 366 (8311) 72.
- The Economist, 2003c. 'Hot potato revisited'. *The Economist* 369 (8349) 76.
- The Economist, 2004. 'Food for thought'. *The Economist* 371 (8377) 71-72.

- Tietenberg T, 1996. *Environmental and natural resource economics*, 4th edition. Harper Collins College Publishers, New York.
- Tillman DA, 1998. 'Fuels from waste'. In: Kroschwitz JI and Howe-Grant M (Editors), *Kirk-Othmer Encyclopedia of chemical technology, Volume 12*, pp. 110-125. John Wiley & Sons, New York.
- Tilton JE, 1996. 'Exhaustible resources and sustainable development : Two different paradigms'. *Resources Policy* **22** (1-2) 91-97.
- Trnka M, Dubrovský M, Semerádová D, and Zcaronalud Z, 2004. 'Projections of uncertainties in climate change scenarios into expected winter wheat yields'. *Theoretical and Applied Climatology* **77** (3 - 4) 229-249.
- Troen I and Petersen EL, 1989. *European wind atlas*, Risoe National Laboratory, Roskilde.
- Tromp OS, 1995a. *Sustainable use of renewable resources for material purposes*, UNEP-WG-SPD, Amsterdam.
- Tromp OS, 1995b. *Towards sustainable quality: A methodological principle for sustainable management of material use*. Ph.D. Thesis: Center for Energy and Environmental Studies (IVEM), University of Groningen.
- Tuinstra W, Hordijk L, and Amann M, 1999. 'Using computer models in international negotiations - the case of acidification in Europe'. *Environment* **41** (9) 33-42.
- Turkenburg WC, 1993. 'Forecasting, toegepast op onze energievoorziening (Forecasting, applied to our energy supply)'. In: Ruiter Wd (Editor), *Dictaat Energie en Milieu (Syllabus Energy and the Environment)*. University of Utrecht, Utrecht.
- UN, 1999. *World Population Prospects - the 1998 revision*, United Nations, New York.
- UNCED, 1992. *The Earth Summit*, United Nations Conference on Environment and Development, New York.
- UNEP, 2002. *Global Environment Outlook 3*, United Nations Environment Programme, Nairobi.
- UNEP/IEA, 2002. 'Reforming energy subsidies'. United Nations Environment Programme / International Energy Agency, Nairobi.
- UNFCCC, 1997. *Kyoto protocol to the United Nations Framework Convention on Climate Change*, United Nations Framework Convention on Climate Change, United Nations, New York.
- UNIDO, 2002. *Industrial statistics database 2002 (CD-ROM)*, United Nations Industrial Development Organization, Vienna.
- Unruh GC, 2000. 'Understanding carbon lock-in'. *Energy Policy* **28** 817-830.

- van Andel P, 1994. 'Anatomy of the unsought finding. Serendipity: origin, history, domains, traditions, appearances, patterns and programmability'. *British journal for the philosophy of science* **45** (2) 631-648.
- van Asseldonk M, 2004. *Modelling Power Exchange Between Norway And The Netherlands Through The Norned Cable*. M.Sc. Thesis: University of Twente / Norwegian University of Science and Technology.
- van Beeck N, 1999. 'Classification of energy models'. *Research memorandum*, No. FEW 777, Faculty of Economics and Business Administration, Tilburg University, Tilburg.
- van den Brink RMM and van Wee GP, 1997. 'Energiegebruik en emissies per vervoerwijze (energy consumption and emissions per transportation mode)'. *RIVM-rapport*, No. 773002 007, Rijksinstituut voor Volksgezondheid en Milieu, Bilthoven.
- van der Sluijs JP, 1996. 'Integrated Assessment Models and the Management of Uncertainties'. No. WP-96-119, IIASA, Laxenburg.
- van der Sluijs JP, Potting JMB, Risbey J, van Vuuren DP, de Vries HJM, Beusen A, Heuberger P, Quintana SC, Funtowicz S, Klopogge P, Nuijten D, Petersen A, and Ravetz J, 2001. 'Uncertainty assessment of the IMAGE/TIMER B1 CO2 emissions scenario, using the NUSAP method'. No. 410 200 104, Dutch National Research Program on Climate Change,
- van der Wal J and Noorman KJ, 1998. 'Analysis of household metabolic flows'. In: Noorman KJ and Schoot Uiterkamp AJM (Editors), *Green households?: domestic consumers, environment and sustainability*, pp. 141-183. Earthscan Publications Ltd, London.
- van Grinsven P, *Clingendael Institute / IIASA-PIN*, personal communication, 2004.
- van Vuuren DP and de Vries HJM, 2001. 'Mitigation scenarios in a world oriented at sustainable development: the role of technology, efficiency and timing'. *Climate Policy* **1** (2) 189-210.
- van Vuuren DP, Strengers BJ, and de Vries HJM, 1999. 'Long-term perspectives on world metal use - a system dynamics model'. *Resources Policy* **25** 239-255.
- van Wijk A, 1990. *Wind energy and electricity production*. Ph.D. Thesis: University of Utrecht.
- van Zon H, 2002. *Geschiedenis & Duurzame Ontwikkeling (History & Sustainable Development)*, Netwerk Duurzaam Hoger Onderwijs, Nijmegen.
- Venselaar J and Weterings R, 2004. 'Chemie in transitie? (Chemicals in transition?)'. *Arena (Het Dossier)* **10** (4) 70-73.
- Virtanen Y and Nilsson S, 1993. *Environmental impacts of waste paper recycling*, International Institute for Applied System Analysis, Laxenburg.

Visser R, *Deputy-Director of the OECD Environment Directorate, Head of the OECD Environmental Health and Safety Division, and project leader of the OECD Environmental Outlook*, personal communication, 2004.

Vringer K and Blok K, 2000. 'Long-term trends in direct and indirect household energy intensities: a factor in dematerialisation?'. *Energy Policy* **28** (10) 713-727.

Watkins GC, 2006. 'Oil scarcity: What have the past three decades revealed?'. *Energy Policy* **34** (5) 508-514.

Watson RT, 2002. 'The future of the intergovernmental panel on climate change'. *Climate Policy* **2** (4) 269-271.

WCED, 1987. *Our common future*, World Commission on Environment and Development, Oxford University Press, Oxford/New York.

Webster MD, Forest CE, Reilly J, Babiker MH, Kicklighter D, Mayer M, Prinn RG, Sarofim M, Sokolov A, Stone PH, and Wang C, 2003. 'Uncertainty Analysis Of Climate Change And Policy Response'. *Climatic Change* **61** 295-320.

Weinstock IA, Barbuzzi EMG, Wemple MW, Cowan JJ, Reiner RS, Sonnen DM, Heintz RA, Bond JS, and Hill CL, 2001. 'Equilibrating metal-oxide cluster ensembles for oxidation reactions using oxygen in water'. *Nature* **414** 191-195.

Wernick IK and Themelis NJ, 1998. 'Recycling metals for the environment'. *Annual Reviews of Energy and the Environment* **23** 465-497.

Westbroek P, 1991. *Life as a Geological Force: dynamics of the earth*, W.W. Norton & Co., New York - London.

Wilson W, 2000. *Simulating ecological and evolutionary systems in C*, Cambridge University Press, Cambridge.

Wilting HC, 1996. *An energy perspective on economic activities*. Ph.D. Thesis: University of Groningen.

Wiselius SI, 1994. *Houtvademecum*, 7th edition. Stichting Centrum Hout, Almere.

Wit RCN, de Bruyn SM, Blom MJ, Kampman BE, Keizer Id, and de Boer LC, 2003. 'Policy options for improving security of energy supply - background document'. No. 03.7443.27, CE, Delft.

Worrell E, 1994. *Potentials for Improved Use of Industrial Energy and Materials*. Ph.D. Thesis: University of Utrecht.

Worrell E, Price L, Martin N, Farla J, and Schaeffer R, 1997. 'Energy intensity in the iron and steel industry: a comparison of physical and economic indicators'. *Energy Policy* **25** (7-9) 727-744.

Worrell E, Ramesohl S, and Boyd G, 2004. 'ADVANCES IN ENERGY FORECASTING MODELS BASED ON ENGINEERING ECONOMICS'. *Annual Review of Environment and Resources* **29** (1) 345-381.

Zackrisson M, 2005. 'Environmental aspects when manufacturing products mainly out of metals and/or polymers'. *Journal of Cleaner Production* **13** (1) 43-49.

Zylicz T, 1995. 'Goals, principles and constraints in environmental policies'. In: Folmer H, Gabel HL, and Opschoor H (Editors), *Principles of Environmental and Resource Economics*, pp. 155. Edward Elgar Publishing Limited, Cheltenham.